



## CHAPTER 1

**Role of Information Technology  
Revolution in Economic Development  
and Military Competition on the  
Korean Peninsula**

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The information technology revolution is real and in full swing on the Korean peninsula. Like all other nations that choose to embrace it, Koreans are compelled to redefine their traditional concepts of time, space, speed, conversation, and language into the IT-driven notions of 24-hour daytime, cyberspace, speed of light, pictograms (n:n), and digital content. Information technology connects individuals, firms, and governments via information networks and shared databanks, thereby facilitating the production, distribution, and consumption of information within the whole economy and society.

In terms of its transformational impact on the national way of life, economy, and culture, the digital revolution of the 21<sup>st</sup> century is equivalent to the steel and railroad revolutions of the 19<sup>th</sup> century and the automobile revolution of the 20<sup>th</sup> century. Through revolutionary developments in the creation, distribution, and utilization of knowledge and information via the means of advanced information technologies, Koreans established whole new industries utilizing IT and the Internet, and introduced new

ways of doing business in the traditional sectors of economy. They transformed the production cycle “from brawn to brain” and the distribution cycle “from paper trail to click-and-go.” The digital revolution accelerated technological innovation, reduced product cycles, increased investment risks, and multiplied returns. The IT revolution raised Korea’s economic competitiveness by facilitating better knowledge of one’s customers, suppliers, competitors, and technologies; by cutting the production costs, distribution costs, administrative and overhead expenses; as well as by increasing the productivity of the Korean workforce and profitability of Korean companies.

The new digital economic environment also poses new problems in socio-economic development, including the enormous impact of a growing digital divide on social equity and international competitiveness, sets new tasks for Korean governments, and calls for a new IT industrial policy to transform the Korean peninsula into a global leader -- e-Korea.

Without doubt, both Koreas see ICT as a core element of domestic developmental strategy, as a major source of foreign exchange earnings and, in strategic terms, as a source of national power and competitive economic advantage, as well as a prerequisite for extending the organizational and extractive capacities of the state. In addition, the South uses ICT as a force multiplier in the network-centric warfare of the information age and as a vehicle for empowering the civil society and promoting democracy and social justice in the age of globalization.

### **South Korea’s Digital Juggernaut**

Over the past forty years, Korea has successfully modernized and industrialized its economy, which resulted

in an unprecedented increase in the per capita income from US\$ 82 in 1961 to over US\$ 10,000 in 2001. Until the mid-1990s, Korea's accelerated economic growth was driven by traditional manufacturing industries such as shipbuilding, chemical, and automobile industries. However, with the advance of the knowledge-based economy in the late 1990s, the information technology sector has been playing an increasingly significant role in the formation of added economic value and in contributing to sustainable economic growth.

Over the past decade, the IT industry grew three times faster than the ROK GNP as a whole. In 2000, the IT industry contributed 50.5 percent to the ROK GNP growth, and 29.7 percent to the ROK exports. In 2000, Korean IT industry exported US\$ 51.2 billion worth of goods and services, and IT trade surplus reached US\$ 52 billion over the past four years (or 61.7% of the ROK's total trade surplus, which was US\$ 84 billion, for the same period). The development of the IT industry brought on the market revolutionary new products ranging from CDMA-based mobile telephone handsets (US\$ 10.2B in exports in 2000), to PCs (US\$ 2.8B in exports in 2000), to TFT LCDs (US\$ 3.17B in exports in 2000), to DRAM semiconductor chips (US\$ 26B in exports in 2000). It opened the way for new telecommunication services, including wireless phones (26.82M subscribers in 2000) and broadband Internet (10M subscribers in 2002). It facilitated the development of the software industry and gave rise to the "Teheran Valley" in Seoul (the official incubator of IT Korea, where there are 1,500 registered IT companies), as well as "software centers" and "soft towns" in the periphery.

Furthermore, the rapid expansion of IT industry resulted in diverse spill-over effects, such as activating wired and wireless e-commerce (B2B, B2C, G2B, and G4C),

digitalizing contents industry (by providing superior multimedia contents such as VOD, or video on demand), and changing distribution channels. Finally, the digital revolution changes the customary lifestyles of the Korean public through the rapid spread of the “PC rooms” (23.5K) and Internet Game cafes (10M subscribers and 100K simultaneous connectors to the game Lineage, for instance), the SMS-driven “thumb talking” (64M SMS messages per a day), the “cyber apartments” (more than half of all Korean households are connected to the broadband Internet), PDAs, mobile commerce, including “mobile wallet service” and “e-payment,” the HDTV service (1M by 2005) and 3DTV service, and public wireless LAN service. In sum, the shock wave of digital technology swept Korea off its feet, Koreans fell in love with IT and whole-heartedly embraced the “digital miracle.”

What accounts for such a spectacular success in the evolution of new economy and digital society in Korea? The consensus opinion among conference participants was that, first and foremost, it is the ROK government industrial policy aimed at promoting the digital economy through the creation and expansion of connectivity, capacity, and content. In particular, the ROK government built the national backbone, subsidized the upgrading of the telecommunication infrastructure “from giga bps to tera bps” nationwide, and set up data backup centers for four major national information systems, including resident registration. It spent over one billion U.S. dollars to develop human capacity, i.e., IT skills among over ten million Korean citizens, especially in the military service, public education and health care, as well as government administration. The government took a leading role in the R&D of five key IT technologies, including 4<sup>th</sup> generation mobile communications, high-speed fiber-optic subscriber

networks, SmarTV, next generation servers, and next generation data security systems. Also, the government invests heavily in emerging technologies and new IT/BT/NT startups and venture funds designed to integrate IT and next-generation industries such as biotechnology (for instance, bio-chip) and nanotechnology (for instance, pyroelectric nano-devices). Further, it provided critical technical assistance to small and medium enterprises with IT planning and deployment through its “small corporation network program” for three million SMEs. Finally, the government promoted market competition in the IT industry through market liberalization and privatization of Korea Telecom; it established a “digital government” by completing eleven essential tasks of the electronic government and subsidizing civil service, innovation service, and government integrated procurement service; and it created a reliable legal framework enabling the commercial success of digital economy by facilitating online document exchange, legalizing electronic signatures and e-payments, establishing security and authentication protocols and enforcement mechanisms, and ensuring privacy protection.

What are the challenges facing the IT industry in Korea today? It is highly dependent on imports of core components and raw materials. Korean IT companies spend a high proportion of their revenues on foreign license fees. Domestic demand is, by and large, saturated. Korea is heavily dependent on exports to specific regions, primarily North America and China. Can the Korean private sector overcome these challenges? The answer is positive because Korea has a highly skilled work force, well-developed front-end industries, tremendous know-how in mass production technology, and prompt decision-making regarding investment in high-tech.

What are the “soft issues” facing the ROK government in managing the digital revolution? The fundamental task is to bridge the emerging digital divide and promote social equity between “the digitally rich and poor” through IT literacy and training programs for low-income men and women, the elderly, and the disabled at community IT access centers and public institutions. The government will have to promote both English and Chinese literacy as a way of ensuring public access to the World Wide Web. At last, digital revolution raises new issues and contributes to further democratization of the ROK political system and globalization of the ROK society.

### **North Korea’s IT Dreams and Realities**

The North Korean government launched the construction of a modern telecommunications sector more than half a century ago. But, at present, the DPRK’s telephone, telegraph, telex, photo-telegraph, railroad, and radio relay communication networks are largely equipped with obsolete Soviet and Chinese-made equipment of the 1950s-1960s vintage, which exhausted its life warranties and resource potential and functions on a whim and a prayer. The sector is deprived of any new government financing and is faced with unreliable electricity supply and severe deficits in modern equipment, spare parts, elementary components, and raw materials. The existing DPRK telecommunication networks are highly unreliable and inaccurate, inefficient, cost-insensitive, labor extensive, consumer-ignorant, underdeveloped, function erratically, and frequently break down. There is no nationwide unified telecommunications network with duplicate and mutually interchangeable components for emergencies in the North.

The North Korean telecommunication sector was designed and built for governmental and industrial use, and does not

need the consumer for the industry's survival and development. Its primary purpose, especially its content components like radio- and television-broadcasting services, is to serve the interests of Kim's ruling clan and the Workers' Party of Korea, by covering the entire country with a comprehensive spider web of ideological and political propaganda aimed at brainwashing people in every corner of the DPRK. Organizational uncertainties in terms of the subordination of various elements of the telecommunication infrastructure and constant bureaucratic turf battles for pre-eminence and control in the sector, as well as frequent bureaucratic infighting for access to limited and costly telecommunication facilities make the tasks of guidance, supervision, coordination, and administration of telecommunications policies even more difficult to achieve.

On a brighter side, one cannot ignore the fact that despite all the problems facing the telecommunications sector, an ordinary North Korean peasant living in every one out of three remote villages still can make a telephone call to Pyongyang, even though the call is low quality and has delayed connection and frequent interruptions. Every town resident can still make a long distance call to Moscow or Beijing. The DPRK does have several dozen modern telecommunications facilities and academic research institutes with sophisticated telecommunications equipment, allowing them access to and use of modern telecommunications technologies, including wireless radio and telephone, satellite communications, and the Internet. These achievements are not spectacular, especially if compared to those in the South, but most of the governments and populations in the Third World would envy them. The real puzzle is how the North Korean telecommunications personnel are still able to maintain in good working condition most of the telecommunications

facilities and equipment, despite enormous material, technical, and financial difficulties facing them today.

### **ROK's Digital Defense Revolution**

The IT revolution brought dramatic changes in modern warfare, making it increasingly network-centric and elevating information superiority to the status of the sine quo non of desired military capabilities. Real-time communications can tie global capabilities simultaneously to multiple sets of specific forces at a local place and time. Common battlespace awareness, resulting from common operating picture, and assured, streamlined, and highly-networked retrieval and dissemination of real-time information allow for a greatly accelerated operational tempo, as well as more accurate identification of friend and foe on the battlefield. Real-time, sensor-to-shooter coupling, enabled by wideband links and intelligent databases, reduce the number of critical nodes manned by humans. The concentration of fires enabled by precision-guided munitions make the battlespace more lethal and more dispersed, while freeing the source of combat power from the physical location of battlespace assets or entities. Instead of the massing of forces, the IT allows for the massing of effects. As a result, military forces and their support units can be much more effective despite their reduced battlefield footprint. The risks of warfare associated with easy-to-attack friendly targets decrease dramatically.

The IT revolution is the driving force behind the ongoing defense digitization and unfolding revolution in military affairs in the ROK armed forces, causing transformational changes in weapons systems, especially the C4ISR organizational structures, and military doctrine.

First, C4ISR systems are indispensable for the development of the knowledge-based defense system, especially for the creation of the common operational picture for integrated air, sea, and ground operations, which is the key to success in modern network-centric warfare. The ROK armed forces are least invested in the development of the observe phase of C4ISR assets (with exception of the recently fielded SIGINT system called “PaekDoo” and IMINT system called “KeumGang”), especially in the area of strategic ISR assets, which are totally dependent on the USFK and CFC. As for the orient, decide, and act phases of C4ISR, the ROK armed forces introduced digitized command, control, and communications systems in a top-down manner. They started with the implementation of TACCIMS at the CFC in July 1991, and Korean Joint Forces Command and the Services’ Headquarters in December 1991, and later upgraded to the GCCS-K. Then, in 1999, they fielded the CPAS for use by echelons above corps. The ROK Air Force fielded the MCRC (Master Control Reporting Center) system for command and control over air operation in a grand approach in 1986, with the second batch to be fielded in 2002. The ROK Navy fielded the KNTDS for command and control of naval operations in an incremental approach in 1996, with the second batch to be implemented in 2003. The ROK Army is developing its tactical C4I systems to be fielded from 2004-2006 in an evolutionary approach. Recently, through the implementation of CALS (Computer-Aided Logistic System), the ROK armed forces have successfully digitized munitions and logistics and are now proceeding rapidly with digitization of the maintenance service system, administrative support system, and personnel education.

At the tactical level, the ROK military began to construct a digitized defense infrastructure by improving mobile telecommunication system for tactical units in the field.

The core of this project is to improve the existing tree-type communication system into a grid-type system and to upgrade mobile voice communication system to simultaneous mobile voice communication and laptop data transfer system. With the completion of this digitized defense infrastructure, the ROK armed forces will have all tactical units linked in a unified digital network.

The ROK military IT experts admit that the ROK armed forces lack indigenous experience in developing their own C4ISR systems in all four phases. In general, the ROK MND approach is that it is more desirable to cultivate powerful software rather than to construct deluxe physical hardware systems because of budgetary limitations, technological constraints, and rapid IT advances in the commercial sector. They usually benchmark the advanced foreign C4ISR systems and attempt to design domestically their own systems by learning the lessons from foreign R&D and application experiences. Alternatively, they procure systems developed commercially by foreign developers or by FMS cases from the U.S. government. This notwithstanding, they consider purchasing a whole foreign common operating environment system to be the least desirable option. At the same time, they believe that the U.S. restrictions on the release of technical information constitute a major impediment to further development of C4ISR systems in the ROK armed forces. They urge more military technical personnel exchanges and combined military-technical research programs involving military, academic, defense research institutes, and defense-industry representatives.

The ROK armed forces recognize the importance of the interoperability problem along the “compatibility-integration continuum.” The joint interoperability problem, which exists between the ROK Army, Air Force, and Navy,

is believed to be purely technical in essence. If joint interoperable service capabilities are to be emphasized in future warfare, the current hybrid type C4ISR architectures can be harmonized through the use of the same hardware and shared software. However, at present, the joint interoperability problem is exacerbated by the absence of a principal organization to drive the interoperability issues within the ROK armed forces, by the lack of standards, plans, and procedures for the development of Korean common operating environment, as well as by competitive demands, scarce budgetary resources, and time pressures faced by various services.

In contrast, the combined interoperability problem between the ROK armed forces and USFK is not only technical, but also military-political in nature. From a technical standpoint, it does not matter whether a particular C4ISR system is a U.S. or ROK product as long as they are compatible and can exchange information through shared software. This notwithstanding, system interoperability may present a major design issue if the designer knows only what information he needs to receive from or transmit to operate, while each system keeps its own procedures secret from associated systems. In this case, the designer is tasked to provide means for free information transfer between the combined systems, while ensuring that the transfer is limited only to the information agreed upon by both systems. Hence, designs for interoperability must be based on mutual agreements, not on standards.

The problem arises out of the fact that Washington and Seoul may want to have independent C4ISR systems appropriate for the U.S. and ROK armed forces, respectively, which are separate and not fully integrated -- not just to assure the overall security and reliability of computer networks (which can be done by other technical

means) but, foremost, because of their potential policy disagreements about threat perceptions, future force missions, and fundamental national security concerns. For example, as long as the CFC combined operations are driven by the assessment of the North Korean threat, the need to develop a CCOE on the basis of shared information technologies, applications, systems, and architectures is clear. But, what if, following Korean unification, a new geopolitical situation were to drive a unified Korea away from its lop-sided dependence on the military-strategic alliance with the United States? Will combined interoperability in C4ISR systems between the ROK armed forces and USFK, assuming their continuing presence on the Korean peninsula even after reunification, become an asset or liability in the long run? Or, more generally, if future missions for the U.S.-ROK combined operations cannot be determined yet, how and in which directions can one promote combined interoperability? Thus, the questions “how much interoperability is needed now, and how much interoperability is enough in general?” cannot be answered on purely technical grounds and must be periodically reassessed taking into account evolving geopolitical situation around and outside the Korean peninsula. In other words, the course of IT revolution in Korea will be influenced by the ROK designation of its friends and enemies after reunification.

Some early indications about Korean hesitations on the issue of combined interoperability can be seen in the fact that the ROK armed forces demoted the JFC Defense Digitization Planning Bureau to department status in September 2002, as well as the fact that the ROK MND promotes the idea of minimizing Korean dependence on foreign (read U.S.) systems and has an explicit policy on Information Technology Systems acquisition favoring

domestic developers and manufacturers using domestic standards and patents.

One should not expect from defense digitization an answer to every problem. For example, defense digitization is not a panacea for the “political-military coordination problem.” In theory, as a result of the real-time communications, fully-integrated digital networks, and a click of a mouse, the President can share the common battlespace awareness with a platoon leader who, in turn, can easily learn of the President’s political intent. But, in practice, defense digitization can hardly eliminate room for bureaucratic distortions and outside political manipulations.

Finally, the IT revolution transforming the ROK economy and society greatly influences various RMA initiatives emanating from the ROK Ministry of National Defense, including the work of the National Defense Reform Committee formed in April 1998 and the thinking of the NDRC RMA Group formed in April 1999, as well as the publication of the ROK Air Force Vision 2025, the ROK Army Vision 2010 (II), and the ROK Navy Vision 2020. However, the conference consensus was that the ROK RMA looks “very active in terms of conceptual development, but, in practice, it is just approaching the starting line, concentrating on initial studies of the RMA experiences of the advanced countries.”

### **KPA’s IT Innovations of the Juch’e Style**

One can make four basic assumptions about recent IT developments in North Korea. First, the Korean People’s Army gets the best of the available resources; therefore, if the military wants the technology and equipment to handle information, it gets more and better than the civilian sector. Second, the KPA closely studied the conduct of recent U.S.

military operations from the Persian Gulf to Kosovo to Afghanistan, in which IT played an increasingly important role; therefore, the general IT interests of the North Korean military may be focused on the core areas of defense digitization within the U.S. and ROK armed forces, including C4ISR, logistics and support, network security, and personnel education. Third, the KPA, like the civilian sector, is also faced with severe resource and foreign exchange shortages, as well as with multi-layered international embargoes on trade and technology transfers. Fourth, the KPA seems to be particularly interested in using the information technology for two purposes: on the one hand, to accentuate its asymmetric advantages in war-fighting, especially in such areas as non-conventional weapons, special forces, and forward-based artillery, in order to strengthen their deterrent potential and, on the other hand, to promote its political goals, including the possibility of stepping in and taking over the country leadership if Kim Jong Il is no longer in power.

Despite a long SIGINT history, the presence of significant SIGINT, EW, and EIW capabilities, and a high-level awareness on the part of the DPRK's supreme political and military leadership of the importance of strong and active C4ISR assets, the KPA seems to be only "modestly digitized." It is still predominantly an "analog and tube force" equipped with "appropriate" technology, often going back to the days of the Korean War, not "cutting edge" technology. The level of IT expertise within the KPA and the North Korean defense industry is low, and we tend to overestimate it significantly. Grossly underdeveloped electronics and computer industrial infrastructure, morally and physically obsolete and dysfunctional national telecommunications infrastructure, perennial national macro-economic crisis, virtual collapse of the nationwide power grid, a closed and highly politicized society, and

interagency rivalries, present considerable obstacles in continued development of IT-based C4ISR and EIW capabilities. Also, the lack of system integration is key to the KPA's overall failure. Although one should expect that the North Korean arms manufacturers will attempt to apply IT to weapons development and manufacture, especially sensor technology and precision guidance technology. Because of its relatively modest levels of computerization and telecommunications, any IT-driven enhancements that the KPA undertakes in C4ISR systems, network security, logistics, and munitions have the potential to leapfrog several generations and present a significant force multiplier on the modern battlefield.

Far from creating horizontal information-centered networks among combat entities (people, equipment, organizations), the KPA is expected to use information technology to improve its existing top-down command and control hierarchies and to tighten the security of and access to real-time information dissemination. Instead of establishing common battlespace awareness among various KPA services and military units at the operational and tactical levels, IT is likely to be used to advance one-man real-time battlespace knowledge and assessment resulting in single-handed action though "millions of precision-guided human bullets." Kim Jong Il would be able to receive real-time reports (possibly through a hybrid paging-computer system) from each and every tactical unit and issue direct orders on his personal authority to every soldier and sailor. Of course, in practice, this architectural design may result in uncontrolled chaos and defeat on a battlefield.

It is worth noting that as the DPRK moves into the computer age, modernizes its telecommunication capabilities, and enhances its C4ISR capabilities with IT elements, it will inevitably increase its dependence on

foreign information technologies and thus its own vulnerabilities. From the military standpoint, the spread of IT within the KPA could open another avenue by which North Korea could be attacked. Whereas it is difficult for an enemy force to attack and destroy an underground munitions factory, it may be possible to electronically attack a digitized underground facility through communication channels and disrupt its operations, even despite hardened network security. From the social-political standpoint, the IT revolution is likely to “wreak havoc with the policy of total secrecy” and to expose the North Korean society and the military to political “contamination” from the outside world, despite all government attempts to insulate domestic intranets from the World Wide Web and to monitor Web use by authorized users, especially among the military.

### **Bridging the Digital Divide and the U.S. Policy**

The IT revolution brought about a multi-layered digital divide on the Korean peninsula. It is obvious that the ICT (information and communication technologies) gap between the North and the South is widening dramatically. Whereas the ROK is a global leader in the IT revolution and is one of the most “wired, digitized, and networked” countries in the world, the DPRK is scarcely “wired or computerized” and is one of the most isolated and atomized nations of earth.

In the North, the digital divide in terms of access to computers, functioning telecommunication lines, and the Internet and various intranets is deep and formidable. In particular, there are dramatic differences in access and usage between the party super-elite “voyeurs” on global affairs and the rest of the population, between the military cadres and civilian workforce, between the residents of

Pyongyang and the periphery, between urban and rural residents, and between younger and older generations. The DPRK government severely limits and strictly controls access to and use of ICT, which remains largely a function of political clout and financial muscle. Therefore, it is a good indicator of where a particular institution or individual stands in the North Korean power hierarchy and whether or not they have the capacity to purchase telecommunications equipment and services in cash.

In the South, too, there are significant strata of the population, especially the poor, the elderly, and women, who appear to be left behind by the IT revolution. However, in its drive toward “Cyber-Korea 21,” the ROK government is intent to bring the digital “have-nots” into the information age by building ICT community access centers, subsidizing mobile telecommunication services, and promoting free public access to LANs and the Web.

The digital divide between the ROK and DPRK in terms of ICT connectivity, capabilities, and content is growing exponentially, whereas inter-Korean digital interfaces are very few and extremely circumspect due to technological, economic, political, and military factors, as well as national security concerns. In particular, both governments fear that ICT can be used for propaganda and subversion by the enemy, that ICT may facilitate unauthorized contacts between the two peoples, including spying, that ICT may enable unauthorized technology transfers, that ICT may open a highly potent venue for damage to domestic infrastructure, and so on. President Kim Dae-jung’s “sunshine policy” and his globalization drive alleviated some of these fears in the South, but such internal security concerns are of paramount importance for the insecure and paranoid North. Therefore, e-unification of Koreas remains a long way off.

However, inter-Korean e-cooperation is already here and intensifying. The ICT-related trade and investment have already replaced textiles and food aid as the most significant components in the inter-Korean economic exchanges. The most promising areas of e-cooperation on the business side include such profit-oriented joint ventures as the co-development of new software from games to animated cartoons, the South's outsourcing of assembly of components for ITC products to the North, and promoting inter-Korean e-commerce. On the humanitarian side, it is worth mentioning such not-for-profit joint e-collaboration activities as mediating "virtual" reunions by the Internet video links and e-mail among divided families, and online educational consulting and training in specialized areas like market economics, law, public administration, etc.

Intensifying inter-Korean e-cooperation raises important policy questions for the United States. The U.S. Trading with the Enemy Act and Wassenaar restrictions continue to prohibit the transfer of most of the ICT to the DPRK, including the Pentium-level computer technology and the CDMA technology for mobile telecommunications. The rationale for these sanctions is straight-forward: if the West provides the North with significant computing power and other hi-tech innovations, one day Pyongyang may use them in its weapons R&D and turn them against its own benefactors. A scorpion will always remain a scorpion, i.e., a lethal predator, no matter how difficult a situation he finds himself in.

Surprisingly, many experts believe that the Western embargo on the transfer of some information technologies to North Korea is misguided. They advocate a wider introduction of IT throughout the North Korean society and military. Since some dual-use information and

communication technologies can be easily obtained on the global markets, why does the United States continue to sanction them? Any marginal IT advances are not likely to be sufficient to combat successfully the C4ISR and other digitalized capabilities of the USFK and CFC, but they will be quite sufficient “to politically awaken the North Korean public to the falsehoods and tyranny of their government.” In addition, the allies can actually erode and manipulate the KPA’s “digitally-resistant military capabilities” through the spread of IT-based assets and structures. Furthermore, by giving IT tools to the North Korean civil society, the West can dilute the KPA’s political power, narrow the digital gap between the “military haves” and the “civilian have-nots,” and bring about a better balance between civilian and military sectors in the DPRK.

The problem with the IT sanctions is further exacerbated by at least three factors. First, the IT embargo is leaking like an old and rusty bucket: the North is already procuring very advanced computer technology through purchases and gifts from Japan, China, and Russia and is downloading rather sophisticated software from the Internet for free. Clearly, the ROK private sector appears to miss some lucrative business opportunities in the DPRK because of the IT trade restrictions. Second, every day the South Korean businesses and citizens replace thousands of old computers and other electronic gadgets that must go to the garbage dumps – or could be given to the North, which could alleviate the inter-Korean digital divide, if it were not for the U.S.-led sanctions. Third, now that the North is planning to set up a nationwide mobile phone network and is considering which mobile standard to adopt, it is in the national interest of the ROK to see to it that Pyongyang chooses the CDMA technology rather than the GSM standard, whereby narrowing the digital divide and laying the foundation for a common future standard in mobile

telephony in a unified Korea. However, the South cannot share the CDMA technology with the North without the approval of the U.S. Department of the Treasury, which will not be forthcoming any time soon.

The IT revolution obviously puts the current U.S. policy towards the Korean peninsula in a spotlight. If Washington persists in its strict enforcement of ITC sanctions against Pyongyang, the Korean public may perceive this decades-old policy as part of a broader U.S. strategy to maintain the North-South division in all areas, including the digital division between the two Koreas. The United States is well-advised to be more selective, less restrictive, and more far-sighted in determining which particular areas of inter-Korean IT cooperation should be blocked or permitted. Integration of basic ITC standards, albeit potentially risky from a military standpoint, should be politically tolerable under the “sunshine” policy and can ultimately benefit both Koreas and the cause of Korean reconciliation and reunification.

### **Contributions to the Present Volume**

The present volume is a product of an international conference on information technology and national security on the Korean peninsula, which took place at the Asia-Pacific Center for Security Studies in Honolulu, Hawaii, October 8-10, 2002. The book’s nineteen chapters are divided into three parts: Part One – Current Status of the Telecommunications Sector and Information Technology Industry in the DPRK and ROK, Part Two -- IT Revolution and Its Impact on Defense Modernization in the Korean People’s Army and Defense Digitization in the ROK armed forces, and Part Three -- Implications of Korean Information Technology Revolution on Conflict and Cooperation in Northeast Asia. The aim of the book is to

provide a comprehensive analysis of a cutting edge topic in the academic and policy-oriented research on Korean affairs, namely the role of the information technology revolution in economic development and military competition on the Korean peninsula. This book is a product of collaborative efforts by civilian (government, corporate, NGOs, academic) and military (Army, Air Force, Navy, Marines, C4ISR) experts -- practitioners with a vision -- from the ROK, United States, and their Northeast Asian allies and partners.

In part one, chapters two through six examine the origins, driving forces, scope, main directions, and security implications of the development of the telecommunications sector and information technology revolution on the Korean peninsula. In part two, chapters seven through twelve analyze the current status and future prospects for defense digitization of the ROK armed forces, examine the IT-related challenges facing the development of integrated, combined, and joint warfare capabilities in the Korean theatre, and discuss the impact of the IT revolution on the ROK national security strategy, military doctrine, and operational concepts. Chapters thirteen through fifteen attempt to answer hard questions about the role and impact of IT on defense modernization in the Korean People's Army, and go a long way in identifying basic trends and key issues in the North Korean military thinking on the use of IT, information systems, and information operations.

In part three, chapters sixteen and seventeen discuss the lessons and prospects for IT-sector cooperation between Korea and their Northeast Asian neighbors, in particular Japan and Russia. Chapter eighteen addresses the concerns about the growing "digital divide" between North and South Korea and proposes ways to bridge it. Lastly, chapter nineteen discusses the prospects for and difficulties

facing the e-unification of and e-cooperation between two Koreas.

The premise of this book is that the age of “Digital Korea” has already arrived on the peninsula. E-Korea is no longer a dream. It is reality. The information technology revolution breaks the decades-old barriers and creates its own digital divides and e-challenges in the areas of economic development, military competition, and political legitimization games on the peninsula. The digital society of tomorrow is gaining a foothold in both Koreas today. Tradition and modernity enter into a new cycle of confrontation and co-habitation in the digital age in Korea.

